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Biography - Thomas G. Davis, ***Managing Member/Vice-Chairman & Cofounder***
iPaper, LLC/Diversified Dynamics, Inc. 100 Shockoe Slip, 2nd Floor, Richmond, VA 23219

Tom Davis was born July 27, 1950, the son of the former Mary Elizabeth McDonald and Roger H. Davis. He grew up in Warner Robins, Georgia. Roger Davis was a Warner Robins city councilman from 1956-64 before his election as Mayor of Warner Robins where he served from 1964-68. Tom moved to Myrtle Beach, SC at age 16, graduating from Myrtle Beach High School in May 1968. He entered Coastal Carolina College; a regional campus of the University of South Carolina System located 10 miles west of Myrtle Beach near the town of Conway where he was elected Freshman Class Student Representative before transferring to the main campus in Columbia in 1970. Mr. Davis majored in Business Administration while at the university. In 1972 he accepted a sales position with the Columbia office for the Penn Mutual Life Insurance Company and immediately excelled. In 1974 Tom returned to Myrtle Beach to open his own insurance agency and by December 1976 had become the most successful insurance agent in the NE region of South Carolina, regardless of Company affiliation. In 1975 and 1976 Mr. Davis was recruited by American University to teach professional designation Chartered Life Underwriter (CLU) business insurance courses to other agents aspiring to improve their own performances. He was 25 years old. During this same period his insurance industry peers elected Tom Davis as the *Charter President* for the Myrtle Beach Life Underwriters Association. Mr. Davis sold his insurance agency in 1977 to begin developing real estate. By 1980 he was responsible for having developed some of the areas most innovative projects that included single-family homes, lots and condominiums. In 1980 Tom moved to St. Simons Island, GA to begin several large condominium developments on St. Simons Island and on nearby Amelia Island, FL. His projects succeeded one after another as he built homes and condominiums on golf courses, and along the oceanfront on both St. Simons Island and Amelia Island, as well as "inland" where he developed what would become some of the most prestigious "hide-away" areas that can be found on those two beautiful islands. In 1986 his wife Susan, a native of Pennsylvania, convinced him to move their growing family "further north". From 1986-1992 the Davis family split time between Richmond, VA and Pawley's Island, SC before deciding to locate in Midlothian, VA near Richmond. During this time Tom regularly consulted with several national public real estate companies where he helped to design, plan and initiate large-scale, multi-million dollar planned developments. In 1995 Tom was asked by Bill Edwards, owner of a small start-up electronic voting system company, to assess Edward's *"Votronic"* voting machine against the election industry's current standards. Mr. Edwards was trying to sell his company, which Tom briefly considered purchasing with several investors ... but the group decided to develop an entirely new voting system from scratch. Edwards eventually sold the *"Votronic"* to ES&S in 1998. Tom's early investigation of the "election industry" left him shocked. It appeared that equipment standards were often ignored in many states and very unreliable systems were in widespread use. Davis decided to develop a new voting system based entirely on standards to be determined by thorough research with customers (voters), while relying on Federal Election Commission electronic voting system standards for "minimum" functionality guidelines. He presented his ideas to former Virginia Governor, L. Douglas Wilder and in August 1997 **Diversified Dynamics, Inc.** was incorporated. Wilder and Davis immediately hired *Science Applications International Corporation "SAIC"* to develop their then unnamed systems' specifications and to develop a software functionality design program. *Litton Industries* was brought into the project by SAIC to help develop hardware specifications. Under SAIC's guidance a third contractor, *Data Display Systems* came on board. After months of testing , design, redesign ... then, throw it all out and start again ... change was the only constant; but in the end, after nearly three years of intense development and independent testing, Diversified Dynamics had succeeded in developing the most advanced electronic voting system in America. Word of official certification by the National Association of State Election Directors (NASED) for Diversified Dynamics' SYSTEM 5 DVRS (hardware) and 5 PLUS! EMS (election management software) arrived just in time to watch the Presidential Elections of 2000 unfold.

In 2000 Tom Davis formed a "sister" company, **iPaper, LLC** with approximately 25 investors, many of them original investors in Diversified Dynamics. iPaper owns state-of-the-art electronic data collection technologies as well as audio ballot technologies for electronic voting. iPaper entered into an exclusive Agreement with *NCS Pearson* in July 2000 that permits *NCS* to develop iPaper technologies into new "digital data"capture formats specific to educational testing. *NCS Person* currently scores approximately 60% of the K-12 tests administered in the United States public schools. Last year *NCS Pearson* processed more that 30% of the 2000 U.S. Census, all with state-of-the-art optical scanning equipment. These companies believe that *"iPaper"* technologies will soon revolutionize how data is "retrieved" from paper forms, in many applications by replacing optical-scan technology.

iPaper™

Tom Davis has been married to the former Susan Knight for 21 years. He has four children; two girls and two boys, ages 25, 23, 19 and 17. Tom is an avid reader and enjoys golf. He has a 14 handicap.

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TESTIMONY OF THOMAS G. DAVIS

MANAGING MEMBER/VICE-CHAIRMAN & COFOUNDER
iPAPER, LLC/DIVERSIFIED DYNAMICS, INC.
RICHMOND, VIRGINIA

SUBMITTED BEFORE THE UNITED STATES HOUSE OF REPRESENTATIVES
COMMITTEE ON HOUSE ADMINISTRATION
MAY 17, 2001
WASHINGTON, D.C.

Mr. Chairman and Members of the Committee, as you continue to address the critically important issue of election reform, allow me to say thank you for the opportunity to present testimony for your consideration. I am grateful for the opportunity to offer my perspective and to respond to your question: *"Can we act quickly and effectively to correct the systemic problems that are inherent to the vast majority of America's current voting systems"* and can we do it in a way that will allow the overwhelming majority of its citizens to be confident in our processes and satisfied that democracy works? The answer is yes, but ... it can only be accomplished with your help within the time frame that America's citizens are demanding.

The deeply ingrained crisis of confidence that American's have in our current voting processes is well deserved. For too long, too little resources were allocated to replace the vast majority of America's unreliable voting systems; but very few citizens were aware of the tolerated margin of error that continues to exist in the majority of our polling places. Well, they know about it now. I especially want to commend the Committee's Ranking Member, Congressman Steny Hoyer of Maryland, for introducing the bipartisan "*Voting Improvement Act*" early in this Congressional session. Congressman Hoyer's Bill acknowledges the critical importance of providing immediately available federal financial assistance to our states as they struggle with how to pay to fix a problem that we all know needs fixing. The Maryland Legislature joins with the legislatures of several other prominent states that certainly want to fix this problem, but they need your help.

I also want to take this opportunity to congratulate Committee Member John Linder of Georgia for the efforts his state is taking to improve the voting process. Under the leadership of Georgia's visionary Secretary of State Cathy Cox, the State of Georgia overwhelmingly (and with strong bipartisan support) passed Georgia SB 213 to begin the process of selecting and installing a uniform statewide voting system prior to the presidential elections in 2004. This Congress can insure that goal is met in Georgia and in every other state that chooses to act in accordance with the wishes of the great majority of the American people. Likewise, if Congress refuses to respond to our citizens crisis of confidence, I believe that you may be inviting an avalanche of litigation that would probably be centered on the equal protection clause ... and if by 2002 or 2004 we have done little or nothing to correct the current problems with America's voting systems ... since they were revealed to us all; I believe that probable scenario could be far worse and much more expensive for our citizens to remedy (and to endure) than to begin to repair our problems now. Truly now is the time.

We can do it now. Working together, America has at its disposal the manufacturing, systems integration, training, testing and currently available voting technology resources to insure that we are conducting the "whole cost" least expensive and most reliable elections in the world.

Historically, American citizens have always been able to look to Congress for leadership whenever we faced a national crisis. I am asking this Congress not to ignore the real financial dilemmas that our states must resolve as they consider this problem. Florida should be commended for acting quickly to eliminate punch cards. But much more reliable and user-friendly systems exist than commercially available optical-scan systems deployed with paper ballots in a statewide precinct environment. It is my opinion that optical-scanning is presently the best available voting solution for absentee voting, given our current voting technologies, but much less expensive and substantially more reliable "digital data" retrieval technology will soon be available that is expected to make optical-scanning of many types of paper forms essentially obsolete ... including printed op-scan ballots of any type. iPaper, LLC continues to develop patented technologies for a variety of applications in this exciting area of communications. With your help, the citizens of Florida will be able to take the next logical step to obtain state-of-the-art electronic voting systems after 2002. Some NASED certified electronic voting equipment could produce "*on demand*" paper trails today to document the intention of the voter, even simultaneously with the casting of a vote if required to do so. All NASED certified systems could reproduce paper ballots in acceptable configurations should a hand recount be required.

I'm proud to say that Diversified Dynamics' SYSTEM 5 DVRS (Direct Vote Recording System) is the first system type mentioned. If legislation is enacted that requires every voter to receive a paper copy of his or her cast ballot from an electronic voting system, we could do that now. But I urge Congress and the various states to proceed very carefully in this area. A century ago "proof" of how a voter voted was sometimes converted to "cash" by scofflaws and the process of elections became the process of buying votes. Permitting electronic "ballot review" prior to a voter casting a vote is a far more secure process that we believe also helps to insure the integrity of elections. Diversified Dynamics is proud to be among very few companies to have met, and in our case, exceeded, the existing federal guidelines recommended by the Federal Election Commission for electronic voting systems as administered by the National Association of State Election Directors (NASED). Doug Lewis, Executive Director of the Election Center, does an outstanding job of working with NASED to administer this program.

Diversified Dynamics is not an "opportunist" company trying to respond to an existing crisis. Former Virginia Governor, L. Douglas Wilder co-founded Diversified Dynamics with me in August 1997. There was much less public discussion about voting errors then, but we knew that critical problems were rampant with punch card, optical-scanning and early technology electronic voting systems, most of which are still in use all across America. Our goal was to be part of the solution not part of the problem. We knew that the process of developing an entirely dependable electronic voting system would require a comprehensive, expensive and time-consuming research and development effort. We knew that most of our competitors were perfectly content selling consumables like punch cards or printed ballots to local election officials who were (and are) often "locked-in" to buying those materials because, while their voting systems didn't work perfectly, they sometimes didn't work at all if they attempted to purchase supply substitutions for their closed-design systems operating on proprietary software programs. These "programs" were often guarded as "trade secrets" by old-line vendors to help insure that their "proprietary brand" of ballot was used. We didn't wait on a Federal Judge to Order us to develop handicap access features. We sought out the National Federation of the Blind to give us advice and to guide us in the development of user-friendly interfaces for the visually impaired. We were pleasantly surprised to learn that our standard voter interface, the "*cast-vote*"

button, was the easiest and most desirable interface for any voter, sighted or visually-impaired. We intend to continue to work with the NFB and to seek their counsel.

We also learned that "actual" rather that "digitized" voice was much preferred by visually impaired voters when presented with audio ballots. An unexpected benefit from our research revealed that when presenting audio ballots without the necessity of special "tactile" interfaces, illiterate voters who may have never learned to read could easily vote utilizing those ballots. Further research revealed that black and white LCD (liquid crystal display) screens are preferred by voters (but not always by election officials) when voters learned that color could be employed to influence voter selections. Americans want it simple when it comes to elections. We discovered that intuitive membrane switches were much preferred over direct contact "touch-screens". Fully fifty (50%) percent of the thousands of voters we tested (regardless of their race or socio-economic background) when presented with a direct contact touch-screen, didn't know whether to touch it hard or soft, whether to "Check" it or make an "X"; and some voters expressed fear that the screen might shock them with static electricity like a television screen can sometimes shock you. That surprised us. It did not surprise us that voters did not want a tutorial for what they believed should be an intuitive process.

Additional research revealed that a numbered button (switch) located immediately adjacent to a numbered candidates name, displayed on an LCD screen, easily solved the problem. And we learned that by "reversing the display field" when a voter made a selection (changing the contest background from white to black and the letters in a candidates name from black to white for maximum contrast), provided a voter with the "visual affirmation" necessary to inspire confidence that their selection was indeed being properly recorded.

Diversified Dynamics made an early decision not to actively market its products until we had properly secured NASED certifications for both our election management software and for our voting machine hardware. I'm proud to report to you that Diversified Dynamics received full NASED certifications for our election management software and for our voting system hardware in the year 2000.

This Committee asked me to respond to the questions: "*What can be done to improve the equipment certification process*" and "*How can the costs of voting equipment be reduced*"? Responding first to the process of certification, I strongly suggest that you make it mandatory that any voting system used anywhere in America be NASED approved. Refuse to provide any funding for the "grand fathering" of any equipment that has not or cannot meet federal guidelines for electronic voting and tabulating systems. Prohibit "waivers" or the issuance of "pending certifications" for equipment utilized for federal elections. Even the smallest precinct in the smallest jurisdiction should employ election software capable of producing paper ballots and reporting results promptly, even when those ballot totals are scheduled to be tallied by hand because of their small number. Reporting of election results should be uniformly required. Telephones, either fixed-based or wireless, are available everywhere. Slow reporting of results could be almost immediately remedied. The practice of slow reporting should be prohibited.

Focus on simplifying the evolutionary process of voting system "product enhancement and improvement" but <u>do not relax the current initial process required for certification</u>. Rather than support the relaxation of standards, Diversified Dynamics supports the adoption of higher certification

standards. We also support the incorporation of what historically have been marketed as "added features" by election equipment vendors be made "required features" for certification. I offer audio feedback capability as an example of what should be a ubiquitous feature for voting systems. The ability to display ballots in multiple languages on command would be another. Large type fonts would be another. Some vendors can deliver those features today.

Congress could help to facilitate technological improvements in voting systems by making certification requirements essentially impossible to circumvent. Provide no funding for legacy technology systems. Develop pilot funding programs for the states that will permit them to support development of new display, audio and wireless technologies for voting applications in the future. If a state wants to participate in new voting technology development there should be a way for them to initiate it, working with Congress. These "development programs" should be open to everyone, not just to preferred vendors. That type of "old practice" created many of our current problems with voting systems. Good sunshine laws and the enforcement of high standards will help to fix it.

We should not continue down our current path of financing purchases of old technologies and old-style voting equipment because "*that's what we already have and that's all that will work with our system*".

The technology required to fix America's voting system problems exists today and it should (*it depends on you and on the states to determine if it will*) cost far less that you probably think it will cost to fully deploy it. There are excellent ways to finance critically needed voting equipment and creative ways are being developed and refined to insure that no one gets "stuck" with old technology that they're still paying for long after better technology is readily available. Voting systems should have "open" standards; components from various manufacturers and vendors should communicate with one another. If a new printer becomes available that works better and costs less, a state or a city or a county or a town should not be forced to live with an inferior device operated by "proprietary software". It should be required that source codes for election systems software be "on deposit" in any state where it is sold and available for inspection by state authorized sources. States should shun software not developed on open platforms that can be easily modified to accept product enhancements, regardless of their source. Vendor licenses should permit states to accept these changes, should they choose to do so.

It's been said that sometimes people have two reasons that explain why they did something, "*one reason that sounds good*" and "*the real reason.*" I believe that may be true in this situation, which your Committee has come face to face with. Congress should swiftly enact legislation that provides states with voting equipment *Grants* ... tethered only by a states willingness to accept federal performance standards for the equipment purchases they are contemplating. In so doing, this Congress will have acted for two very good reasons, because "*it's the right thing to do for America*" and because "*it's the right thing to do for America.*"

The confusion America was forced to endure in the presidential election of 2000 need never be repeated. With your help, we have available today all of the resources required to begin to repair the crisis of confidence that continues to shroud America's voters. Democracy deserves your best.

Thank you for providing me the opportunity to share my perspective with you on this very important issue.